

CLAIMS

1. A magnetron comprising:

a cylindrical anode cylinder being open at one of the ends thereof,

a metal cylinder hermetically sealed at the opening end of said anode cylinder via a magnetic pole piece,

a third harmonic restraint cylindrical choke and a fifth harmonic restraint cylindrical choke disposed coaxially inside said metal cylinder,

a plurality of anode segments disposed on the inner face of said anode cylinder so as to be directed toward the central axis thereof,

an antenna lead connected to a desired position of said anode segment,

an output portion connected to said antenna lead passing through said magnetic pole piece and said metal cylinder so as not to make contact therewith and insulated from said metal cylinder, wherein

said metal cylinder and said third harmonic restraint cylindrical choke disposed therein constitute a quarter-wave choke for a third harmonic frequency band, and said third harmonic restraint cylindrical choke and a fifth harmonic restraint cylindrical choke disposed therein constitute a quarter-wave choke for a fifth harmonic frequency band,

and

the electrical length L_1 of said antenna lead from the connection end of said anode segment to the opening end of said third harmonic restraint cylindrical choke is $1/2$ of the wavelength of the third harmonic.

2. A magnetron comprising:

a cylindrical anode cylinder being open at one of the ends thereof,

a metal cylinder hermetically sealed at the opening end of said anode cylinder via a magnetic pole piece,

a third harmonic restraint cylindrical choke and a fifth harmonic restraint cylindrical choke disposed coaxially inside said metal cylinder,

a plurality of anode segments disposed on the inner face of said anode cylinder so as to be directed toward the central axis thereof,

an antenna lead connected to a desired position of said anode segment,

an output portion connected to said antenna lead passing through said magnetic pole piece and said metal cylinder so as not to make contact therewith and insulated from said metal cylinder, wherein

said metal cylinder and said third harmonic

restraint cylindrical choke disposed therein constitute a quarter-wave choke for a third harmonic frequency band, and said third harmonic restraint cylindrical choke and a fifth harmonic restraint cylindrical choke disposed therein constitute a quarter-wave choke for a fifth harmonic frequency band, and

said third harmonic restraint cylindrical choke is open on the side for introducing said antenna lead connected to said anode segment, a small diameter portion is formed on the opening end side thereof, and a large diameter portion is formed on the output side thereof.

3. A magnetron in accordance with claim 1, wherein said third harmonic restraint cylindrical choke is open on the side for introducing said antenna lead connected to said anode segment, a small diameter portion is formed on the opening end side thereof, and a large diameter portion is formed on the output side thereof.

4. A magnetron in accordance with claim 2 or 3, wherein said third harmonic restraint cylindrical choke is configured so that the dimension of the inside diameter of said small diameter portion thereof

is not more than $1/4$ of the wavelength of the third harmonic.

5. A magnetron in accordance with any one of claims 2 to 4, wherein said third harmonic restraint cylindrical choke is formed so that the step portion between said small diameter portion and said large diameter portion thereof is substantially right-angled.

6. A magnetron in accordance with any one of claims 2 to 4, wherein said third harmonic restraint cylindrical choke is formed so that the step portion between said small diameter portion and said large diameter portion thereof is inclined.

7. A magnetron in accordance with any one of claims 1 to 6, wherein the output portion thereof is installed on said metal cylinder via a cylindrical insulator and has an exhaust pipe connected to and held on said cylindrical insulator and a cylindrical portion extended in the direction in parallel with the lead-out direction of said antenna lead inside said exhaust pipe, and said cylindrical portion and said antenna lead constitute a quarter-wave choke for the low side band of the third harmonic.